

WHAT IS CLAIMED IS:

1. A projection exposure apparatus that supplies liquid in a space between a projection optical system and a substrate and transfers a pattern on said substrate via said
5 projection optical system and said liquid, said apparatus comprising:

a substrate table on which a substrate is mounted that can be moved holding said substrate; and

10 a correction unit that corrects positional deviation occurring in at least one of said substrate and said substrate table due to supply of said liquid.

2. The projection exposure apparatus of Claim 1, said
15 apparatus further comprising:

a position measuring system that measures positional information of said substrate table, wherein

said correction unit corrects positional deviation occurring in at least one of said substrate and said substrate
20 table due to supply of said liquid according to the position of said substrate table measured by said position measuring system.

3. The projection exposure apparatus of Claim 2 wherein
25 said correction unit corrects an error in said positional information in at least one of a substrate and a substrate table measured directly or indirectly by said position measuring system, which occurs due to supply of

liquid.

4. The projection exposure apparatus of Claim 1 wherein
said correction unit corrects positional deviation that
5 occurs by a change in the shape of said substrate table.

5. The projection exposure apparatus of Claim 1 wherein
said substrate table has a fiducial member used for
position setting, and
10 said correction unit corrects positional deviation
between said fiducial member and said substrate.

6. The projection exposure apparatus of Claim 1 wherein
said correction unit corrects the distance between said
15 projection optical system and said substrate in an optical
axis direction of said projection optical system.

7. The projection exposure apparatus of Claim 1 wherein
said correction unit corrects said positional deviation
20 according to a physical quantity related to said liquid.

8. The projection exposure apparatus of Claim 5 wherein
said physical quantity related to said liquid includes
at least one of pressure of said liquid and surface tension
25 of said liquid.

9. The projection exposure apparatus of Claim 1 wherein
said correction unit corrects positional deviation that

occurs by vibration of said substrate table.

10. The projection exposure apparatus of Claim 1, said apparatus further comprising:

5 a mask stage on which a mask having said pattern formed is mounted that can be moved holding said mask; and

said correction unit corrects said positional deviation by changing a thrust given to at least one of said substrate table and said mask stage.

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11. The projection exposure apparatus of Claim 10 wherein

said correction unit comprises a controller that changes said thrust by feedforward control.

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12. The projection exposure apparatus in any one of Claims 1 to 11 wherein

15 said correction unit corrects said positional deviation based on position measuring results of a transferred image of said pattern transferred on said substrate.

13. The projection exposure apparatus in any one of Claims 1 to 11 wherein

25 said correction unit corrects said positional deviation based on simulation results.

14. A stage unit that has a substrate table which movably holds a substrate whose surface is supplied with liquid,

said unit comprising:

a position measuring unit that measures positional information of said substrate table; and

a correction unit that corrects positional deviation
5 occurring in at least one of said substrate and said substrate table due to supply of said liquid.

15. The stage unit of Claim 14 wherein
said correction unit corrects positional deviation that
10 occurs by a change in the shape of said substrate table.

16. The stage unit of one of Claims 14 and 15 wherein
said substrate table has a fiducial member used for position setting, and
15 said correction unit corrects positional deviation between said fiducial member and said substrate.

17. An exposure method in which liquid is supplied to a space between a projection optical system and a substrate
20 held on a substrate table and a pattern is transferred onto said substrate via said projection optical system and said liquid, said method comprising:

a detection process in which a change occurring in at least one of said substrate and said substrate table due to
25 supply of said liquid is detected; and

a transfer process in which said pattern is transferred onto said substrate based on results of said detection.

18. The exposure method of Claim 17 wherein
in said transfer process, said transfer is performed
with at least one of positional deviation that occurs by a
change in the shape of said substrate table and the distance
5 between said projection optical system and said substrate in
an optical axis direction of said projection optical system
corrected.

19. The exposure method of Claim 17 wherein
10 in said detection process, a change according to a
physical quantity related to said liquid is detected, and
in said transfer process, said transfer is performed
with said change according to said physical quantity related
to said liquid corrected.

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20. The exposure method of Claim 19 wherein
said physical quantity related to said liquid includes
at least one of pressure of said liquid and surface tension
of said liquid.

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21. The exposure method of Claim 17 wherein
in said transfer process, said transfer is performed
with positional deviation that occurs by vibration of said
substrate table corrected.

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22. The exposure method of Claim 17 wherein
in said transfer process, said transfer is performed
with said change corrected by changing a thrust given to at

least one of said substrate table and a mask stage on which
a mask where said pattern is formed is mounted.

23. The exposure method of Claim 22 wherein
5 the change of said thrust is performed by feedforward
control.

24. The exposure method in any one of Claims 17 to 23
wherein
10 said change is corrected based on position measuring
results of a transferred image of said pattern transferred
on said substrate.

25. The exposure method in any one of Claims 17 to 23
15 wherein
said change is corrected based on simulation results.